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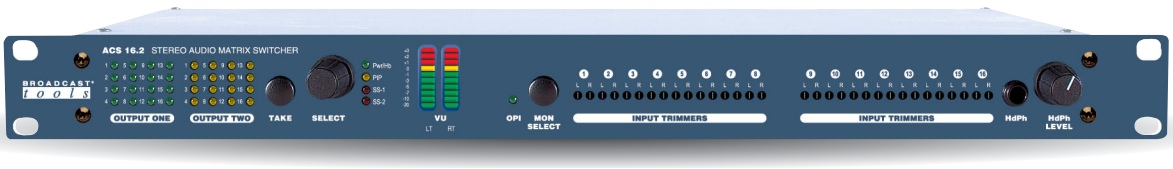
PROBLEM SOLVED

Installation and Operation Manual



ACS 16.2

Sixteen Input, Dual Output Stereo Audio Matrix Switcher

Manual update: 5/5/2014 Firmware Version 1.6

If you need a firmware upgrade, contact Broadcast Tools®

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INTRODUCTION

Thank you for your purchase of a Broadcast Tools® ACS 16.2 Sixteen Input, Dual Output Stereo Audio Matrix Switcher (referred to as the ACS 16.2 throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the Broadcast Tools® ACS 16.2.

SAFETY INFORMATION

Only qualified personnel should install Broadcast Tools® products. Incorrect or inappropriate use and/or installation could result in a hazardous condition.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment.

If you would like more information about BROADCAST TOOLS® products, you may reach us at:

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THANK YOU FOR CHOOSING
BROADCAST TOOLS® BRAND PRODUCTS!

Designed and Assembled in Washington State, USA

CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

NOTE:

This manual should be read thoroughly before installation and operation.

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Product Description

The Broadcast Tools® ACS 16.2 provides matrix audio switching of 16 stereo inputs to two stereo outputs. Matrix switching allows any/or all inputs to be assigned to any/or all outputs with inputs one and two having fade and dim capabilities. The ACS 16.2 may be controlled via front panel channel selection knob and take push button, contact closures, open collectors, logic and/or the multi-drop RS-232 serial port (USB or Ethernet optional). Installation is simplified with plug-in euroblock screw terminals.

FEATURES

- Channel selection knob for input selection for both outputs, along with the front panel "take" push button.
- Three audio switching modes; interlock, overlap and mix.
- Inputs one and/or two audio for output one can be faded and/or dimmed via serial commands.
- Internal stereo silence sensors monitor each output. The ACS is equipped with front panel silence sensor LED indicators; independent SPDT alarm relays and adjustable SS alarm delay and restore timing duration.
- Stereo LED VU meters with front panel output selection switch.
- Built-in stereo headphone amplifier with front panel output selection switch, headphone jack and level control.
- Power-up selection of inputs to outputs, mute or last source selected.
- Most configuration options set via rear panel dipswitches.
- 16 input "PIP" (GPI / Trigger) port (or remote control) with front panel "PIP" LED indicator.
- 16 open collector outputs configurable for inputs status tallies or computer control.
- Eight SPST (NO) relays.
- Front panel multi-turn input trimmers.
- Internal output level adjustments trimmers.
- Electronically balanced stereo inputs and outputs with low noise and distortion circuitry.
- Multi-drop RS-232 serial port (OPTIONAL USB and/or Ethernet adapters) with power and data activity LED's.
- Plug-in euro block screw terminals for ALL audio I/O and remote control connections.
- 1-RU aluminum enclosure.
- Surge protected external universal switching power supply (100 - 240 VAC / 50/60 Hz input) with IEC input plug with domestic AC power cord.

FUNCTION DESCRIPTION

Front Panel

The ACS 16.2 is a 1-rack unit device (19"w x 1.75"h x 10"d). The front panel includes a channel selection knob, channel "take" push button, input level trimmers, I/O and function LED indicators, headphone and LED VU meter selection switch, ¼" T/R/S headphone jack and level control.

Rear Panel

Installation is simplified with plug-in euro block screw terminals. The rear panel hosts the input and output connectors, "OPTIONS" Dip-switch, multi-drop RS-232 modular connector, chassis ground screw and 5-pin DIN universal power supply connector.

Front Panel Knobs/Switches

The front panel of the ACS 16.2 contains one channel selection knob and a "TAKE" push button for input to output selection, a monitor selection switch, for which LED indicators are also present. The front panel also houses the input level controls and stereo VU meter and headphone jack/volume control. The input channels may be configured for the following switching modes using the Options dip-switch:

- Overlap - Overlap one audio source with another while the button for the second source is held down. Both channels will be fed to the output until the TAKE button is released, at which time the first audio source will be switched off.
- Mix - More than one input at a time may be connected to any given output - Push the TAKE button once to connect input, then press again to disconnect.
- Interlock - Connecting one input to any output disconnects all other inputs from that output

Front Panel LED Indicators

The ACS 16.2's front panel LED indicators provide operational display of the following information:

- "Output One" LEDs 1-16: Lit to indicate a given input channel is routed to output one.
- "Output Two" LEDs 1-16: Lit to indicate a given input channel is routed to output two.
- "PWR/HB" LED: Illuminates when power is applied and blinks when serial data is active.
- "PIP" LED: Flashes to indicate PIP activity.
- "SS-1" and "SS-2" LEDs: Silence Sensor indicators for output one and output 2, lit when silence is detected. The silence sensor must be enabled for this to function.
- "OP2" LED: Lit when output two is selected for VU metering/headphone monitoring.

Audio Inputs

Each of the sixteen stereo inputs are balanced bridging (20KΩ, depending on the position of the trimmer) at a nominal line level of +4dBu. Front panel multi-turn level trimmers are provided for each channel. Inputs 1 and 2 can faded up, faded down or dimmed when routed to output 1 when using serial control commands.

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Audio Outputs

The ACS 16.2 provides two balanced low impedance stereo outputs. The output level may be adjusted with internal single turn trimmers.

Silence Sensors

The ACS 16.2's outputs have built-in silence detectors that monitors the sum each stereo channel. The factory default delay is set at 10 seconds, with a threshold of -30 dB, while the restore time is set at 2 seconds. Upon silence detection the "SS-1" and/or "SS-2" LEDs light along with the "SS1" and/or "SS2" relays will activate for the duration of the silence. Serial data is also sent on the loss and restoration of audio. The sensors may be programmed for:

- Silence sense threshold. The audio level below which is consider silence. This may be set to -20 dBu, -25 dBu, -30 dBu or -35 dBu.
- Number of seconds of silence that must be present before an alarm state is reached (Acquire delay.)
- Number of seconds that valid audio must be present before an alarm state is cleared (Restore delay).

PIP (GPI/Trigger)/Remote Control Inputs

The ACS 16.2 has 16 status inputs that may be configured for PIP ("triggers") or remote control operation. The status inputs accept momentary contact closures to ground, open collectors or TTL/CMOS input logic levels.

Open Collector Status Outputs

The ACS 16.2 provides sixteen open collector status outputs. The status outputs may be configured to operate in one of three modes:

- The status outputs follow the associated channel.
- The status outputs a one-second pulse when the associated channel is selected.
- Software control

Relay Outputs

The ACS 16.2 contains eight SPST (normally open) relays. Each relay may be latched on, latched off or momentarily turned on using serial commands. The "pulse" time may be set from 100 msec to 9.9 seconds. The default pulse length is one-second. Alternately, the relays may be set for "MPX" mode. In the "MPX" multiplex mode, the relay follows the associated input channel assigned to output two.

RS232 Serial Port

The AC 16.2's serial communication is supplied with a multi-drop RS-232 port, allowing up to four ACS 16.2's on the same computers serial port. Commands may be entered either via a menu (with unit ID 0 only) (menu mode) or a short form code (ASCII serial string-burst mode). The command to enter menu mode is: *0MM. The menu mode displays certain parameters, and allows for the control and/or configuration of most switcher functions. All commands and responses use normal ASCII characters, facilitating scripting. A burst mode command starts with an asterisk (*) followed by the device (ID) address as a single decimal digit, then the command.

User Programming

The ACS 16.2 programming is stored in non-volatile memory. Configuration is set with selection dipswitches and computer commands.

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INSTALLATION GUIDELINES

Inspection

Please examine your ACS 16.2 carefully for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package contains the ACS 16.2, universal input, multi-voltage DC switching power supply w/ IEC domestic AC power cord, reversed modular serial cable with the "S9" 9-pin D-Sub adapter. Manuals are downloadable from our web site.

Setting "OPTIONS" Dipswitches

The ACS 16.2 is equipped with an 8-position "OPTIONS" dipswitch. The dipswitch specifies 2-bit unit ID, baud, audio modes (mix, interlock, overlap), and other features listed below. Access to this switch is on the rear panel. Follow the description below.

"OPTIONS" Dipswitch Functions

Switch Number	Default Setting	Function
1	OFF	Binary address 1 (Default ID = 0)
2	OFF	Binary address 2
3	OFF	Baud rate (Default) OFF = 9600 / ON = 38400)
4	OFF	Stereo Audio Switching (Default = Overlap)
5	OFF	Stereo Audio Switching (Default = Overlap)
6	OFF	Open Collector and Relay configuration (Default = Burst)
7	OFF	Power up modes (Default = Last source selected)
8	ON	Remote Control / "PIP" GPI/Triggers (Default)

Address (Unit ID) DIP Switches

Switch 1	Switch 2	Mode
OFF	OFF	ID = 0
ON	OFF	ID = 1
OFF	ON	ID = 2
ON	ON	ID = 3

Baud Rate DIP Switch

Switch 3	Mode
OFF	9600
ON	38400

Audio Switch Mode DIP Switches

Switch 4	Switch 5	Mode
OFF	OFF	Overlap
ON	OFF	Interlock
OFF	ON	Interlock
ON	ON	MIX

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Open Collector/Relay Mode DIP Switch

Switch 6	Function
OFF	Burst mode control.
ON	Follow / MUX mode.

Power-up Mode DIP Switch

Switch 7	Function
OFF	Last Source Selected
ON	Use the "Burst" mode serial command *0CPS to store the current selected input/output configuration.

Remote / "PIP" (Triggers) Mode DIP Switch

Switch 8	Function
OFF	Remote Control
ON	"PIP"/Triggers enabled

Mounting

The ACS 16.2 is designed to be rack mounted in a standard 19" rack. It should be mounted in an area that is accessible from the rear and preferably away from sources of heat. We recommend that you bench test and become familiar with the operation of the ACS 16.2 before permanently installing it.

Power Supply Connection

Insert the universal AC input, multi-voltage DC switching power supply's 5-pin DIN connector into the power receptacle on the rear panel of the ACS 16.2. When ready, plug the power supply into the appropriate AC receptacle. ⓂCAUTION! Only use the power supply provided with this product.

CAUTION! Installation of the ACS 16.2 in high RF environments should be performed with care. Shielded cable is suggested for all control, audio inputs and outputs. All audio cable shields should be tied to the "G" terminal on each channel. The station ground should be connected to the chassis ground screw ("Chs Gnd") located on the right side of the chassis as viewed from the rear. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

It is recommended that all cables connected to the ACS 16.2 be looped through ferrite cores to suppress RF. Surge protection with RF filtering such as the Tripp Lite "ISOBAR 4" is also suggested for the power distribution. The use of an uninterruptible power supply (UPS) is highly recommend to provide backup power in case of power outages.

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Connecting the Audio Inputs and Outputs

The input channels are numbered from 1 through 16 on the rear panel from RIGHT to LEFT as viewed from the rear. The ACS 16.2 interfaces to your audio equipment through plug-in 5-position euro block screw terminals. Follow the legends on the rear of the unit for the desired audio input and output connections. Before installing a wire, remove the plug-in euroblock screw terminal and turn each capture screw fully counterclockwise. Strip each conductor to a length of 0.25" and insert the conductor fully into the terminal. Turn the capture screw fully clockwise to secure the conductor. The terminals accommodate wire sizes from 16 - 28 AWG solid or stranded wire. Connections should be made to the + and - inputs for balanced operation. For unbalanced inputs connect to the + inputs and connect the – sides to ground using jumper wire. The input impedance is 20KΩ, if 600Ω termination is required, user supplied resistors may be installed on the connector.

Connections can be made to the + and - outputs for balanced operation, or to the + **output and ground for unbalanced output operation. CAUTION! In no case should either the + or - OUTPUTS be connected to ground on the switcher or an external device.**

Input 1
(Top row, TB1)

2L-	2L+	Gnd	2R-	2R+
1L-	1L+	Gnd	1R-	1R+

Input 2
(Bottom row, TB1)

Audio Input and Output Level Adjustment

Once the input and output connections have been made, the input levels can be adjusted. The switcher is factory set for unity. Recommended input levels would be in the range of 0 dBu to +8 dBu. Should input levels need to be changed, trimmers are accessible from the front panel. Each stereo input is labeled and has one trimmer per channel.

Connecting the remote control/PIP (trigger) inputs

The ACS 16.2's PIP inputs have two operation modes; PIP (triggers) and remote control.

The operation mode is set by the switch number 8 on the Options dipswitch (SW3-8) located on the ACS's rear panel. When SW3-8 is OFF the unit is in remote control mode and when SW3-8 is ON the unit is in PIP ('triggers") mode. The PIP/remote control connections to the switcher are found on the bottom row of the 18-positon euro-block connector TB10. Each channel is pulled high (5-volts) through a 20K resistor and is considered ON when connected to ground (pulled low.)

In PIP ("triggers") mode (SW3-8 ON) the inputs supply status to any serial polling device (when the unit ID is set to 0 (ZERO) no polling of inputs is required). Response time is set for 50ms, but may be configured from 40ms to 2.54 seconds. For information on the PIP serial status commands and syntax refer to the serial burst mode commands section of this manual.

In remote control mode (SW3-8 OFF) there are remote control inputs for each of the 16 audio input channels along with an output 2 (OP2) modifier input. If an input channel is off a momentary closure to ground on its remote control input will turn it on for output 1.

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(TB10 Bottom)

Remote Control Mode (SW3-8 = OFF)

Pin	Function	Label
1	Input	IN 1
2	Input	IN 3
3	Input	IN 3
4	Input	IN 4
5	Input	IN 5
6	Input	IN 6
7	Input	IN 7
8	Input	IN 8
9	Input	IN 9
10	Input	IN 10
11	Input	IN 11
12	Input	IN 12
13	Input	IN 13
14	Input	IN 14
15	Input	IN 15
16	Input	IN 16
15	Input	OP2
18	Ground	Ground

PIP Mode (SW3-8 = ON)

Pin	Function	Label
1	Input	PIP 1
2	Input	PIP 3
3	Input	PIP 3
4	Input	PIP 4
5	Input	PIP 5
6	Input	PIP 6
7	Input	PIP 7
8	Input	PIP 8
9	Input	PIP 9
10	Input	PIP 10
11	Input	PIP 11
12	Input	PIP 12
13	Input	PIP 13
14	Input	PIP 14
15	Input	PIP 15
16	Input	PIP 16
15	N/A	N/A
18	Ground	Ground

Connecting relay outputs

Eight SPST relays can be used to interface with external equipment using contact closures. The relays may be controlled by serial commands. Each relay may be commanded by serial command to: pulse, latch on, or latch off. The relay connections are located on the top and bottom TB11 terminal blocks.

(TB11 Bottom)

Pin #	Function	Label
1	Output	K1 Normally Open
2	Output	K1 Common
3	Output	K2 Normally Open
4	Output	K2 Common
5	Output	K3 Normally Open
6	Output	K3 Common
7	Output	K4 Normally Open
8	Output	K4 Common

(TB11 Top)

Pin #	Function	Label
1	Output	K5 Normally Open
2	Output	K5 Common
3	Output	K6 Normally Open
4	Output	K6 Common
5	Output	K7 Normally Open
6	Output	K7 Common
7	Output	K8 Normally Open
8	Output	K8 Common

Connecting open collector outputs

The ACS 16.2's open collector outputs have two different operation modes; in burst control mode (SW3-6 OFF) they are control by serial commands, in remote control mode (SW3-6 ON) they provide status for all 16 inputs. The open collector outputs can be used to interface with external equipment. When an open collector output is turn on it will go low providing a return path (ground) for an LED indicator, TTL/CMOS logic or relay. External pull-up resistors may be required in some installations. The open collector connections are located on the top TB10 18-position terminal block.

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(TB10 Top)

Pin #	Function	Label
1	Output	OC 1
2	Output	OC 2
3	Output	OC 3
4	Output	OC 4
5	Output	OC 5
6	Output	OC 6
7	Output	OC 7
8	Output	OC 8
9	Output	OC 9
10	Output	OC 10
11	Output	OC 11
12	Output	OC 12
13	Output	OC 13
14	Output	OC 14
15	Output	OC 15
16	Output	OC 16
17	Input	MACRO
18	Ground	Ground

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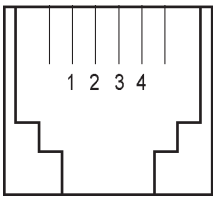
Connecting the RS-232 Serial Port

The ACS 16.2 is supplied with a cross-over 4-conductor modular cable and a (S9) 9-pin female D-sub modular adapter for serial control. Only use the modular cord that is supplied with the ACS 16.2 or a replacement that reverses (cross-over), such as Radio Shack Cat No. 279 0347. Connect the cable between the ACS 16.2 and your computers COM port or USB adapter cable (optional). The ACS 16.2 may be serially controlled at baud rates of 9600 or 38400 baud. The unit is shipped set for 9600 baud, with 8 data bits, no parity and one stop bit.

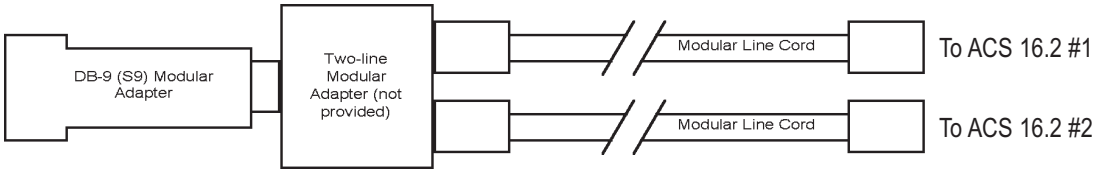
RJ-11 Adapter Pin	DB-9 D-SUB Pin #	ACS 16.2 (Product Point of view)
4	3	RS-232 Receive
3	2	RS-232 Transmit
2	5	Ground



Modular Jack Pin Numbers

Connecting Two ACS 16.2's to a single computer's serial port

Multiple ACS 16.2's may be cascaded serially to operate from the same serial port. The first step is to assign unit ID's to each ACS 16.2. One suggestion is to assign unit ID 1 to the first ACS 16.2 and unit ID 2 to the second switcher. The second step is to parallel the serial ports of the ACS 16.2's. Plug the male end of the duplex modular adapter into the supplied female (S9) DB-9 to RJ-11 adapter, then attach the supplied modular line cords into each of the duplex modular adapter receptacles (Allen-Tel AT202-6) and the other ends into each ACS 16.2 modular receptacles. See the diagram below.



NOTE: Three or more ACS 16.2's may be daisy chained by using the above description and an Allen-Tel AT150, 5-jack modular adapter.

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OPERATION GUIDELINES

ACS 16.2 Front Panel LED's

Front Panel LED's	Number Of LED's	Activation Event/Mode	Activation Behavior
Input connected to "OP 1"	16 Green	State of audio connections.	ON if connected
Input connected to "OP 2"	16 Red	State of audio connections.	ON if connected
"PWR/HB"	1 Green	Valid power and unit operational.	ON, but flickers with serial activity.
"PIP" (Triggers) input activated.	1 Yellow	Any valid "PIP" / Trigger input, when enabled.	Flickers with PIP input activity.
"SS 1" Silence alarm on output ONE.	1 Red	Duration of silence on output ONE.	In an alarm condition when ON.
"SS 2", Silence alarm on output TWO.	1 Red	Duration of silence on output TWO.	In an alarm condition when ON.
"OP2", VU meter and headphone selection.	1 Green	When illuminated, the VU meters and headphone amplifier is monitoring output TWO.	ON, Output TWO. OFF, Output ONE.

ACS 16.2 Front Panel Channel selection knob and Switch operation

Action	Result
"SELECT" knob. Twist to sequence though inputs one through sixteen for each output.	Selects the desired input to output. As you twist the knob, the LED will display your input to output position. By pressing the **"TAKE"** push button, the LED will stop flashing and go solid. The input is now active. Repeat the process to turn an input off.
"TAKE" button. Turn inputs on or off.	Pressing the **"TAKE"** when an input is selected using the **"SELECT"** knob will turn the input on or off for the designated output.
"MON SELECT". Push to toggle between output one and two monitoring.	Switches headphone/VU monitoring between output one and two.
"HDPH LEVEL". Adjusts the headphone level.	Adjusts the headphone output level.

Serial Control

The unit is controlled in either Menu or Burst mode. It can run at the following data rates: 9600 Default or 38.4K baud. The ACS 16.2's serial communication is supplied with a multi-drop RS-232 port, allowing a maximum of four ACS 16.2's on a single PC's COM port. Commands may be entered either via a menu (menu mode) or a short form code (ASCII serial string-burst mode). All commands and responses use normal ASCII characters, facilitating scripting. A burst mode command starts with an asterisk (*) followed by the device (ID) address as a single decimal digit, then the command.

To control or configure the ACS 16.2 using your PC load a serial terminal application like HyperTerminal or Tera Term and configure the COM port for a protocol of baud: 9600, parity: none, data bits: 8, stop bits: 1, flow control: none, emulation: ANSI. HyperTerminal set up instructions are available on our web site under "Downloads".

The command to enter menu mode is: *0MM. The menu mode displays certain parameters, and allows for the control and/or configuration of most switcher functions.

```
Broadcast Tools(R) ACS16.2, v1.6 - Setup Menu

1 - Set PIP Minimum Hold Time(0 - 2.55 sec)    - Now:0.05
2 - Set Relay/OC Pulse Hold Time(0 - 25.5 sec) - Now: 0.5
3 - Set Relay/OC Follow Mode                   - Now:LATCH:OC SERIAL/RLY SERIAL
4 - Set Silence Sense Acquire Delay (sec)      - Now:  10
5 - Set Silence Sense Restore Delay (sec)      - Now:   2
6 - Set Silence Sense Thresholds               - Now:   Off,    Off
7 - Lock/Unlock Front Panel                    - Now:UNLOCKED
8 - Set Audio Fade Rate                        - Now:1.6

S - Turn ON audio input
M - Turn OFF audio
V - Save Audio Macro
L - Load Audio Macro
C - Show Configuration and Status
F - Set Factory Defaults

Audio Status:
 Inputs     1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16
 Output 1   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 Output 2   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 Fade Gain(db):   -96.0   -96.0

Enter Selection, or Q to quit:
```

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Serial Burst Mode Commands

Burst mode allows a computer or ASCII terminal to control and interrogate the unit. This section defines all burst mode commands. Each burst mode commands starts with an asterisk (*). Next is a single decimal digit that corresponds to the unit (ID) address 0-3. Following the asterisk and the unit ID number are one or more ASCII characters specifying the command. No carriage-return or line-feed is required to terminate the command except for those few commands of variable length and the maximum length is not sent. If the command requests a response, the response will consist of an upper case "S", followed by the unit ID, and then the specific response string. If acknowledgements are enabled, successful commands are responded to with "RRR" while invalid command get an "EEE" response. The syntax of each command is given below. The syntax shows the command exactly as it should be sent, except that lower case characters represent values that should be substituted:

Glossary of Command Notation

Character String	Meaning	Allowable Values
u	Unit ID	0-3
ii	Input Number	01-16
o	Output Number	1-2
r	Output Relay	1-8
o	Open Collector	01-16

Set-up Commands

*uMM - Open up Menu

*uCEx - Enable Error and Good Responses - Where x = Y to enable and N = disable. In this mode, when a command is sent that is in error, the unit will reply (possibly before receiving the entire command) with "EEE." If the command is sent correctly, the unit will reply with "RRR."

*uCDEF - Set factory defaults

*uCIIttt - Set "PIP" Programmable Pulse Stretcher Input Duration = ttt: 000 –> 255 hundredths of seconds (255 = 2.55 Seconds)

*uCLx - Lock Front Panel if x is "L". Unlock Front Panel if x is "U"

*uCPR - Power up audio state: Restore audio from power up state.

*uCPS - Power up audio state: Save power up state.

*uCRtt - Set relay momentary pulse length – tt: 00-99 for 00 –> 9.9 Seconds

*uCSAtttt - Set silence sensor time delay to tttt seconds (0002 – 9999), 0000 = OFF

*uCSBtttt - Set silence sensor restore delay to tttt seconds (0002 – 9999), 0000 = OFF

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Relay and Open Collector Commands

*uORrF - Unlatch output relay “r”

*uORrL - Latch output relay “r”

*uORrP - Pulse output relay “r”

*uOOooF - Unlatch open collector “oo” (Only works in NON-Remote mode)

*uOOooL - Latch open collector “oo” (Only works in NON-Remote mode)

*uOOooP - Pulse open collector “oo” (Only works in NON-Remote mode)

Audio Switch Control Commands

*uiio - Apply input “ii” to output “o”

*uiiA - Apply input “ii” to ALL outputs

*uiiEott - Start overlap - Apply input ii to output o. After tt tenths of a second, remove all other inputs from output o.
NOTE: Only one at a time can be pending per output. Max time 9.9 seconds

*uE - End overlap if in overlap mode. This applies to all outputs that have changed since the last “end overlap” command was issued.

*uiiMA - Mute input “ii” for all outputs

*uiiMo - Mute input “ii” for output “o”

*uMo - Mute output “o”

*uMA - Mute all outputs

*uB,a,a,a,a,a,a,a,a,a,a,a,a,a,a,a,a - Sets inputs, ignoring mode:
NOTE: Input commands MUST be in CAPS.
- A = All “OUTPUTS” OFF
- B = Output 1
- C = Output 2
- D = Outputs 1 + 2

Example: *0B,B,C,D,A,A,A,A,A,A,A,A,A,A,A,A
(Input 1 to output 1, Input 2 to output 2, Input 3 to both outputs, all other inputs are OFF.)

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Special MIX mode commands (the switcher doesn't need to be in MIX mode).

*uii5 - For input "ii", set output 1 ON without affecting any other audio status
*uii6 - For input "ii", set output 2 ON without affecting any other audio status
*uii7 - For input "ii", set output 1 OFF without affecting any other audio status
*uii8 - For input "ii", set output 2 OFF without affecting any other audio status
Input 1 and 2 fade functionality (for output 1 only) is controlled by the following commands:
*uFDnn - Fade down input nn. The speed is set via the menu.
*uFUnn - Fade up input nn. The speed is set via the menu.
Input 1 and 2 dim functionality (for output 1 only) is controlled by the following command:
*uDMnnd - DIM input channel nn to setting d. Where d: 1 = -3db, 2 = -6db, 3 = -10db, 4 = -15db, 5 = -20db.

Information Retrieval Commands

*POLL - Respond with unit (ID) address in appropriate time slot. If there are multiple units on the line, each will respond with a different delay after receipt of this command.

*uSL - Send Audio Status: SuLo,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x<CR><LF>. Where "u" is unit ID, "o" is output, and "x" is "1"for connected; "0" for not connected for each respective input.

*uSPii - Send single input (GPI/Trigger) PIP status. Response is "SuP,ii,x". "x" is 0 if the corresponding input is high, 1 if low.

*uSPA - Send ALL input (GPI/Trigger) PIP status. Response is: "SuP,A,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x<CR><LF > where input 0 is first and input 15 is last. "x" is 0 if the corresponding input is high, 1 if low.

*uSO - Send status of all open collectors. Response is: SuO,x x,x,x,x,x,x,x,x,x,x,x,x,x,x,x,x <CR><LF> "x" is 0 is the corresponding input is off, 1 if on.

*uSR - Send status of all relays. Response is: SuR,x,x,x,x,x,x,x,x<CR><LF> "x" is 0 is the corresponding input is off, 1 if on.

*uSS - Send status of silence sensor: SuS,x,x<CR><LF> x = 0 (not silent), 1 = silent

*uU - Send Unit Information :<name)><version (><cr><lf Example: ACS 16.2V:1.6

*uY - Display configuration.

Real Time Control Commands

*uDxx - Delay xx seconds before processing next command.

*uDLxxx - Delay xxx seconds before processing next command.

*uZx - Echo character "x" to serial control port. This is useful in debugging command strings.

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SPECIFICATIONS

Input Levels:	Max + 27 dBu, balanced, bridging. 20k Ω , depending on input trimmer position.
Output Levels:	Two stereo balanced outputs, +24 dBm. @ 600 Ω . / +27dbu @ 10KΩ . Headphone output, 4.7 Ω . 100mw.
System Gain:	10 dB max.
Frequency Response: *	20 to 20 kHz; +/- .0.25dB
Signal/Noise Ratio: *	>85 dB nominal, weighted 20 to 22Khz, @ +27dBu.
Distortion: *	Less than 0.01% THD @ +27dBu
IMD (250/7kHz): *	Less than 0.01% IMD @ +27 dBu.
Crosstalk: *	-80 dB @ 1khz / -55 dB @ 10 kHz from adjacent off channel.
Switching/Fade Method:	Digitally controlled professional level analog switch arrays. Digital fade/level control for inputs one and two for output one.
Logic:	Flash microprocessor / Non-volatile memory.
Operation Control:	Front Panel – Knobs and momentary switches. Remote/"PIP"(GPI/Triggers) - Momentary (40ms to 2.54 seconds response time, compatible with CMOS/TTL logic, open collector or contact closures to ground. Serial - Multi-drop RS-232, 9600 or 38.4K, 8,N, 1.
Status:	Front Panel – 32 input routing LED indicators. Remote - 16 Open collector outputs (<6vdc @ 100ma each output. max). 8 - SPST Relays / Silence Sensors - 2 – SPDT relays. RS-232 - Multi-drop RS-232, 9600 or 38.4K, 8,N,1.
Interfacing:	Audio & Remote Control - Plug-in euro block screw terminals. Accommodates 16 - 28 AWG wire. Mating connectors supplied. RS-232 Serial - RJ-11/6P4C reversed modular cable & "S9" female 9-pin D-Sub adapter supplied. OPTIONAL: USB-RS-232 Adapter cable and/or Ethernet to serial interface.
Power:	Universal AC (100 - 240 VAC, 46 - 63 Hz) w/IEC input, multi-voltage (+5vdc & +/-15vdc) output switching power supply. CE. Supplied with domestic IEC AC cord.
Mechanical:	19" x 1.75" x 10.0" (WHD)
Weight:	5 lbs, (unit and accessories).

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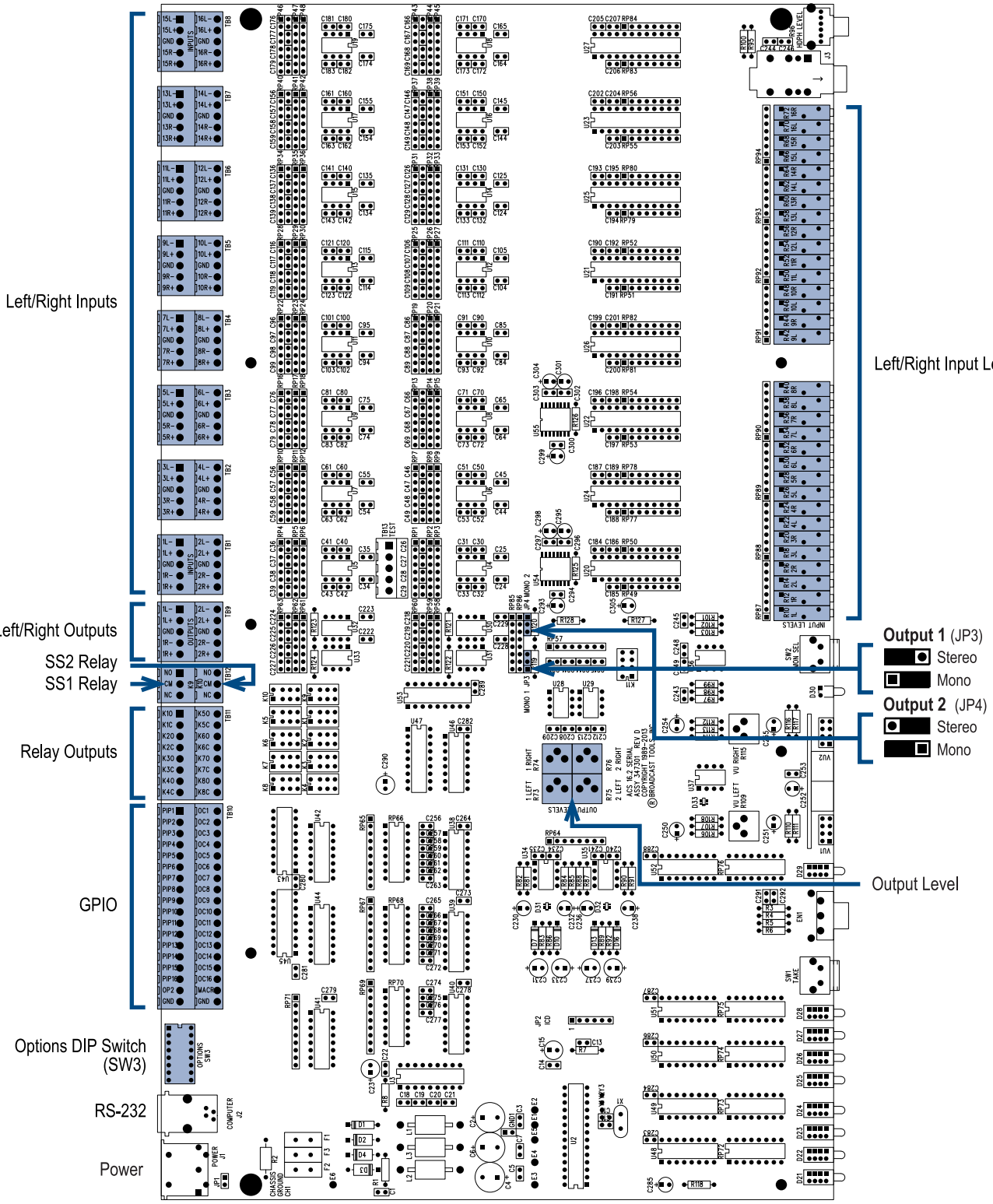
ACS 16.2 Component Layout

Trimmers and Connectors Layout



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